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Docket No.: 10318-US-PA
Application No.: 10/710,659

To the Drawings:

Please substitute the attached amended replacement drawings of FIG.3 and FIG.4 for the pending drawings of FIG. 3 and FIG.4. .

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REMARKS

Present Status of the Application

The drawings and specification are objected. The Office Action rejected all presently-pending claims 1-4. Specifically, the Office Action rejected claims 1 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement and as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action further rejected claims 1, 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Matsko et al. (US 4,331,996). The Office Action also rejected claim 2 under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Matsko et al. and Solomon (US 5,053,978).

In response thereto, Applicants have amended drawings and the specification to overcome the objections and have cancelled claims 1-4 and added claims 5-8 to improve clarity. After entry of the foregoing amendments, claims 5-8 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of objections to the drawings

Regarding with item 1 on page 2 of the Office Action, which stated that the drawings are objected to because they fail to show every feature of the invention specified in the claims. More particularly, the drawings are objected to because they fail to show the timer switch and switch

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circuit having their contacts connected in parallel and forming a first parallel circuit, and starter relay and timer relay having their contacts connected in parallel and forming a second parallel circuit as well as said first parallel circuit and said second circuit are connected in serial.

In response thereto, applicant has amend the claims, which render the objections moot.

Regarding with item 2 on page 3 of the Office Action, which stated that it is not clear what is a meaning of the connecting lines in Fig.3 and 4, whether these are the symbols or functional connectivity or they present real electrical connections.

In response thereto, applicant has amended Figs. 3 and 4. More particularly, as amended in FIGs.3 and 4, a power supply source is in parallel applied to the first parallel circuit, including the switch circuit 21 and the timer switch 22 through a connecting line. The timer switch 22 is controlled by the timer relay 25 through another connecting line. The power supply is then transmitted to the second parallel circuit including the starter relay 24 and the timer relay 25. The frequency converter 26 is in parallel controlled by either the starter relay 24 or the timer relay 25.

The amendments addressed to FIGs.3 and 4 has shown and positively identified the interconnections as described in the Claims. More particularly, the interconnections between the tarter relay 24, the timer relay 25 and the frequency converter 26.

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In view of the amendments above, no new matter is introduced into the disclosure of the invention because the content of the amendments was described and supported in the application as filed. According to the MPEP 2163.07(a), by disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing explicit concerning it. The application may later be amended to recite the function, theory or advantage without introducing prohibited new matter. *In re Reynolds*, 443 F.2d 384, 170 USPQ 94 (CCPA 1971); *In re Smythe*, 480 F. 2d 1376, 178 USPQ 279 (CCPA 1973).

As stated in the Abstract of the Specification,

“The control circuit is capable of keeping the frequency converter on for a predetermined time period when the voltage level of the power supply is below a predetermined voltage level in order to keep the equipment operating. After the lapse of the predetermined period, if the voltage level is still below the predetermined voltage level, the circuit stops to the operation of the equipment to protect the equipment”

Also stated in the Paragraph [0012]

“.....although the starter relay will be off when there is a transient voltage drops to a level below a predetermined voltage, the timer relay will remain on for a predetermined time period. And, when the voltage level returns back to the normal level, the starter relay will be automatically turned on again.”

Also stated in the Paragraph [0010]

“The starter relay is adapted controlling the frequency converter, wherein when a voltage level of a power supply to the control circuit is below a first predetermined voltage level, the starter relay is turned off, and when the voltage level of the power supply for the control circuit is above a second predetermined

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voltage level, the starter relay being turned on. When the voltage level of the power supply to the control circuit is below the first predetermined voltage level, the timer relay remain on for a predetermined time period. The timer relay is adapted for determining whether or not to turn on/off the timer switch."

In view of the description of the specification, and more particularly, the description above, the power supply source is in parallel applied to the switch circuit 21 and the timer switch 22, the timer switch 22 is controlled by the timer relay 25 through another connecting line, and the frequency converter 26 is in parallel controlled by either the starter relay 24 or the timer relay 25. FIGs. 3 and 4 are amended to recite the function, theory or advantage without introducing prohibited new matter.

Regarding with item 3 on page 5 of the Office Action, which stated that the drawings are objected to because they fail to show time T6 in Fig.2 as described in the specification.

In response thereto, the preceding objection was overcome in last response to OFFICE ACTION because T6 is a clerical error of T5 that occurs in Paragraph [0008] in the specification. As in Paragraph [0008] and further in view of FIG.2, it was disclosed that the time that the equipment completely stops is T5, in stead of T6. The detail for understanding of the invention has been shown in the drawing as defined in MPEP § 608.02(d) and it is respectfully requested for reconsideration and the objection should be overcome.

Discussion of Rejections to Claims

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Regarding with item 1 on page 6 of the Office Action, Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. More particularly, the description regarding with the time relay, which "determines or not to turn on/off said timer switch" and the timer switch is not comply with the written description requirement.

As stated in the Paragraph [0010] and in claim 1 as filed,

"The timer relay is adapted for determining whether or not to turn on/off the timer switch."

As stated in the Abstract of the Specification,

"The control circuit is capable of keeping the frequency converter on for a predetermined time period when the voltage level of the power supply is below a predetermined voltage level in order to keep the equipment operating. After the lapse of the predetermined period, if the voltage level is still below the predetermined voltage level, the circuit stops to the operation of the equipment to protect the equipment"

As well established in the written description request, the specification had described the claimed invention in sufficient detail that one skilled in the art, at the time the application was filed, could reasonably conclude that the inventor had possession of the claimed invention. More particularly, it would be understood that the timer switch is controlled by the timer relay. When the starter relay is turned off, the timer relay would remain on for a predetermined time period, to keep the frequency converter on for the predetermined time period. If the timer relay would keep the frequency converter on for the predetermined time period, the timer relay should turn on the timer switch to let form a conducting path for the power supply being applied to the timer relay.

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FIGs. 3 and 4 are also amended to show that the timer switch 22 is controlled by the timer relay 25 through a connecting line. Accordingly, as defined in the newly added claim 5 that "when said voltage level of said power supply being applied to said control circuit is below said first predetermined voltage level, said timer relay remains being turned on for a predetermined time period and said timer switch is turned on to keep said first parallel circuit on receiving said power source being applied to said control circuit, which keeps said frequency converter on" is supported and described in the specification in such a way to reasonably convey to one skilled in the relevant art, at the time the application was filed, that the inventor had possession of the claimed invention.

The amended specification and Figures comply with the written requirement and the rejection is respectfully withdrawn.

Regarding with item 2 on page 6 of the Office Action, which rejected Claim 1 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

In response thereto, Applicants have amended the specification to help to understand a way of the circuit functioning and also rewritten claim 1 into new claims 5 and 8 for clarify.

Claim 5 is related to a control circuit for controlling a frequency converter. The control circuit comprises a first parallel circuit, for receiving a power source being applied to the control circuit, and a second parallel circuit, for turning on or off the frequency converter. The first parallel circuit and the second parallel circuit are connected in series. More particularly, when the voltage level of the power supply being applied to the control circuit is below the first

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predetermined voltage level, the timer relay remains being turned on for a predetermined time period and the timer switch is turned on to keep the first parallel circuit on receiving the power source being applied to the control circuit, which keeps the frequency converter on. During the predetermined time period, if the voltage level of said power supply is increased to reach the first predetermined voltage level, the frequency converter remaining turned on to keep the equipment being operated normally. After the predetermined time period, if the voltage level of the power supply is still below the second predetermined voltage level, the timer relay is turned off and the frequency converter is also turned off.

Claim 8 is related to a control circuit for controlling a frequency converter. The control circuit comprises a first circuit, for receiving a power source being applied to said control circuit; and a second circuit, comprising a starter relay and a timer relay, if both of said starter relay and said timer relay are turned off, said frequency converter is turned off, if either said starter relay or said timer relay is turned on, said frequency converter is turned on. The first circuit and the second circuit are connected in series. When a voltage level of said power supply being applied to said control circuit is below a first predetermined voltage level, the starter relay is turned off, and when the voltage level of the power supply to the control circuit is raised to above a second predetermined voltage level, the starter relay is turned on. When the voltage level of the power supply being applied to said control circuit is below the first predetermined voltage level, the timer relay remains being turned on for a predetermined time period. After said predetermined time period, if the voltage level of said power supply is still below the second predetermined voltage level, the timer relay is turned off, by which the frequency converter is also turned off.

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These claimed subject matters are described in the amended specification and the Figures in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. More particularly, as described in the amended specification and Figures, it is well supported that when the voltage level of said power supply being applied to said control circuit is below the first predetermined voltage level, the timer relay remains being turned on for a predetermined time period and the timer switch is turned on to keep said first parallel circuit on receiving said power source being applied to said control circuit, which keeps said frequency converter on. During the predetermined time period, if the voltage level of the power supply is increased to reach the first predetermined voltage level, the frequency converter remaining turned on to keep the equipment being operated normally. After the predetermined time period, if the voltage level of said power supply is still below the second predetermined voltage level, the timer relay is turned off and the frequency converter is also turned off.

The amended specification and Figures comply with the enablement requirement and the rejection is respectfully withdrawn.

Discussion of objection to specification

Specification is objected to since it does not positively disclose the timer relay functional role and its way of functioning.

As described above, it would be understood that the timer switch is controlled by the timer relay. When the starter relay is turned off, the timer relay would remain on for a predetermined

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time period, to keep the frequency converter on for the predetermined time period. If the timer relay would keep the frequency converter on for the predetermined time period, the timer relay should turn on the timer switch to let form a conducting path for the power supply being applied to the timer relay. FIGs. 3 and 4 are also amended to show that the timer switch 22 is controlled by the timer relay 25 through a connecting line. Accordingly, as defined in the newly added claim 5 that “when said voltage level of said power supply being applied to said control circuit is below said first predetermined voltage level, said timer relay remains being turned on for a predetermined time period and said timer switch is turned on to keep said first parallel circuit on receiving said power source being applied to said control circuit, which keeps said frequency converter on” is supported and described in the specification in such a way to reasonably convey to one skilled in the relevant art, at the time the application was filed, that the inventor had possession of the claimed invention.

In the section “Specification” from page 8 to page 9 of the Office Action, it was stated that the specification does not positively disclosed the timer relay functional role and its way of functioning. Applicants do not agree with such assertion. As discussed above and restated below,

as stated in the Paragraph [0010] and in claim 1 as filed,

“The timer relay is adapted for determining whether or not to turn on/off the timer switch.”

as stated in the Abstract of the Specification,

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"The control circuit is capable of keeping the frequency converter on for a predetermined time period when the voltage level of the power supply is below a predetermined voltage level in order to keep the equipment operating. After the lapse of the predetermined period, if the voltage level is still below the predetermined voltage level, the circuit stops to the operation of the equipment to protect the equipment"

The specification has positively disclosed the timer relay functional role and its way of functioning. The timer relay could be implemented by, for example, an off delay timer model nos. H3CR-H8L or H3CR-H8RL (with Reset), or H3CR-HRL produced by Omron, which was available at the time as the invention was filed. Applicants request for reconsideration and the objection is respectfully withdrawn.

Discussion of rejection to claims under 35 U.S.C. 103(a)

The Office Action further rejected claims 1, 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Matsko et al. (US 4,331,996). Applicants respectfully traverse the rejections for at least the reasons set forth below.

It is well established at law that, for a proper rejection of a claim under 35 U.S.C. §103 as being obvious based upon a combination of references, the cited combination of references must disclose, teach, or suggest, either implicitly or explicitly, all elements/features/steps of the claim at issue. See, e.g., *In Re Dow Chemical*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 208 U.S.P.Q.2d 871, 881 (C.C.P.A. 1981).

Newly added independent claim 5 recites that when the voltage level of the power supply being applied to the control circuit is below the first predetermined voltage level, the timer relay remains being turned on for a predetermined time period and the timer switch is turned on to

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keep the first parallel circuit on receiving the power source being applied to the control circuit, which keeps the frequency converter on. During the predetermined time period, if the voltage level of said power supply is increased to reach the first predetermined voltage level, the frequency converter remaining turned on to keep the equipment being operated normally. After the predetermined time period, if the voltage level of the power supply is still below the second predetermined voltage level, the timer relay is turned off and the frequency converter is also turned off.

Independent claim 5 is allowable for at least the reason that the combination of AAPA in view of Matsko does not disclose, teach, or suggest the features that are highlighted in claim 5 above.

Newly added independent claim 8 recites that when a voltage level of said power supply being applied to said control circuit is below a first predetermined voltage level, the starter relay is turned off, and when the voltage level of the power supply to the control circuit is raised to above a second predetermined voltage level, the starter relay is turned on. When the voltage level of the power supply being applied to said control circuit is below the first predetermined voltage level, the timer relay remains being turned on for a predetermined time period. After said predetermined time period, if the voltage level of said power supply is still below the second predetermined voltage level, the timer relay is turned off, by which the frequency converter is also turned off.

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Independent claim 8 is allowable for at least the reason that the combination of AAPA in view of Matsko does not disclose, teach, or suggest the features that are highlighted in claim 8 above.

Accordingly, claims 5 and 8 is patentable over AAPA and Matsko.

As a matter of law, claims 6 and 7 are patentable over AAPA and Matsko since their dependent claim, claim 1, is patentable over AAPA and Matsko.

The Office Action further rejected claim 2 under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Matsko and Solomon (US 5,053,978). Applicants respectfully traverse the rejections for at least the reasons set forth below.

As discussed above, the AAPA does not disclose activation of the starter relay in a power-up process (page 5 – page 6). However, the AAPA does not disclose the claimed feature “the timer relay remains being turned on for a predetermined time period and the timer switch is turned on to keep the first parallel circuit on receiving the power source being applied to the control circuit, which keeps the frequency converter on.” During the predetermined time period, if the voltage level of said power supply is increased to reach the first predetermined voltage level, the frequency converter remaining turned on to keep the equipment being operated normally. After the predetermined time period, if the voltage level of the power supply is still below the second predetermined voltage level, the timer relay is turned off and the frequency converter is also turned off.” as claimed in claim 5. The AAPA also does not disclose the claimed feature claim 8 recites that “when a voltage level of said power supply being applied to

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said control circuit is below a first predetermined voltage level, the starter relay is turned off, and when the voltage level of the power supply to the control circuit is raised to above a second predetermined voltage level, the starter relay is turned on. When the voltage level of the power supply being applied to said control circuit is below the first predetermined voltage level, the timer relay remains being turned on for a predetermined time period. After said predetermined time period, if the voltage level of said power supply is still below the second predetermined voltage level, the timer relay is turned off, by which the frequency converter is also turned off."

Even combined with Matsko, combination of the AAPA and Matsko still does not disclose the same feature and therefore combination of the AAPA and Matsko does not render claims 5 and 8 obvious. Further, even combined with Solomon, the combination of AAPA in view of Matsko and Solomon does not disclose the same feature of claims 5 and 8 stated above, and therefore does not render claims 5 and 8 obvious. Accordingly, claims 5 and 8 are patentable over AAPA in view of Matsko and Solomon.

Accordingly, claim 6, rewritten from original claim 2, is patentable over AAPA in view of Matsko and Solomon as a matter of law since its dependent claim, i.e., claim 5, is patentable over AAPA.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 5-8 are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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